

INSECTS, to the list of Endangered and Threatened Wildlife:

§ 17.11 Endangered and threatened wildlife.

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
INSECTS							
Beetle, American burying (= Giant carrion beetle).	<i>Nicrophorus americanus</i> .	U.S.A. (eastern States south to FL, west to SD and TX), eastern Canada.	NA	E	351	NA	NA

Dated: June 12, 1989.

Susan Recce Lamson,
Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 89-16344 Filed 7-12-89; 8:45 am]

BILLING CODE 4310-55-M

50 CFR Part 17

RIN 1018-AB23

Endangered and Threatened Wildlife and Plants; "Arabis Serotina" (Shale Barren Rock Cress) Determined to be an Endangered Species

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The Service determines a plant, *Arabis serotina* (shale barren rock cress) to be an endangered species. It is found only in western Virginia and eastern West Virginia. Presently, 26 populations, totaling fewer than 1,000 reproductive individuals, are known. Many populations are adversely affected by deer browsing, construction and maintenance of roads and railroads, and livestock grazing. Several populations occur on Federal lands in the Monongahela and George Washington National Forests. This listing implements the protection provided by the Endangered Species Act of 1973, as amended, for *Arabis serotina*. Critical habitat has not been determined.

EFFECTIVE DATE: August 14, 1989.

ADDRESSES: The complete file for this rule is available for inspection, by appointment, during normal business hours at the Ecological Services Field Office, Suite 322, 315 S. Allen Street, State College, Pennsylvania 16801.

FOR FURTHER INFORMATION CONTACT: Sharon W. Morgan, Fish and Wildlife Biologist (see ADDRESSES section) (814/234-4090).

SUPPLEMENTARY INFORMATION:

Background

Shale barren rock cress (*Arabis serotina* Steele), a member of the mustard family, is one of several plant species endemic to dry, exposed, mid-Appalachian habitats known as shale barrens (Keener 1983). These unique shale slopes of Paleozoic age are found in the Ridge and Valley Section of the Appalachian Mountains from Pennsylvania south to Virginia and West Virginia. Usually surrounded by deciduous forest woodlands, shale barrens are isolated islands of habitat characterized by steep southern exposures (generally greater than 20 degree slopes), relatively sparse vegetative cover, high temperatures and low moisture in the summer, and are usually undercut by a stream at the base (Keener 1983). Eighteen endemic plant taxa are recorded from the shale barrens, including *Arabis serotina* and three other Federal candidate plant species (*Allium Oxiphilum*, *Taenidia montana*, *Trifolium virginicum*) (Keener 1983).

This species is biennial, with populations usually consisting of two age-classes: young, nonreproductive individuals present in basal rosette form; and second-year plants that are potentially reproductive individuals present in the form of erect, flowering plants lacking a basal rosette of leaves. Another component of populations is the seed bank, consisting of dormant, ungerminated seeds found either at the ground surface or buried in the soil. *A. serotina* may not be a strict biennial, meaning that rosettes may persist longer than one year, resulting in a delay of flowering and fruiting beyond the second year. Plants typically grow to a height of 30 to 60 cm. (one to two feet), with a spreading, compound inflorescence of many tiny whitish flowers, each approximately two to three mm. long (one-eighth inch).

Originally described by Edward Steele in 1911, the species has been

confused with the morphologically similar *Arabis laevigata* (Muhl.) Poir var. *burkii* Porter. Hopkins (1937) reduced *Arabis serotina* to synonymy under *Arabis laevigata* var. *burkii*. Both taxa occur on shale barrens, although the latter is not an endemic. Weiboldt (1987a, 1987b) has shown that *Arabis serotina* is distinguished from *Arabis laevigata* var. *burkii* by several key characteristics. *A. serotina* is taller with wider and more-branched inflorescences, and has smaller flowers and more narrowly winged seeds than *A. laevigata* var. *burkii*. There are also considerable differences between the flowering periods of the two taxa. All varieties of *A. laevigata*, including var. *burkii*, bloom in April and May and set seed before *Arabis serotina* begins to bloom in late June or early July. *Arabis serotina* continues to bloom into September (Wieboldt 1987b).

Arabis serotina is presently known from only 26 populations in five Virginia counties (Allegheny, Augusta, Bath, Highland and Rockbridge) and three West Virginia counties (Greenbrier, Hardy and Pendleton). An additional 1934 record from Shenandoah County, Virginia has not been relocated and is considered historic. The species has never been documented to be more widespread, and the reported distribution in seven West Virginia counties (Strausbaugh and Core 1978) was based on collections of *A. laevigata* var. *burkii* (Bartgis 1985). The species' highly restricted range appears to be a result of biogeographic events and not due to recent land-use changes or the lack of suitable habitat elsewhere. During 1983-85, a survey of 70 shale barrens in eight West Virginia counties resulted in only a few new populations (Bartgis 1985). Searches of 15-20 barrens in the range of *A. serotina* in Virginia revealed few additional populations (Mr. Lipford, Virginia Natural Heritage Program, pers. comm. 1988).

In both Virginia and West Virginia, all populations occur on Brallier Formation

shales on south- to southwest-facing slopes at elevations of 1300 to 2500 feet. Most of the known populations occur partially or completely in the George Washington and Monongahela National Forests.

Populations are fairly small at all 26 locations. Since plants in the rosette stage are inconspicuous and easily overlooked, most population counts refer to only flowering and/or fruiting plants. Approximately 130 reproductive plants were found at the 13 Virginia sites in 1987 (M. Lipford, pers. comm. 1987) and only about 700 reproductive individuals comprised the 13 West Virginia populations in 1985 (Bartgis in press). Although a few additional populations may be located in the future, the typically small population sizes suggest that the total number of individuals will remain small. In both states, most populations are moderately to severely browsed by deer. Rangewide, sites have been affected to some degree by road or railroad construction, small flood-control projects, and grazing by livestock.

The U.S. Fish and Wildlife Service (Service) recognized *Arabis serotina* as a Category 2 candidate for listing in the Supplement to Review of Plant Taxa for Listing as Endangered or Threatened Species published in the Federal Register on November 28, 1983 (48 FR 53641). Category 2 comprises those taxa for which listing is possibly appropriate but for which existing information is insufficient to support a proposed rule. The updated notice of review for plant taxa published on September 27, 1988 again included *Arabis serotina* in Category 2.

In 1985, the Service contracted with The Nature Conservancy's Eastern Regional Office to conduct status survey work on *Arabis serotina* and other Federal candidate species. Those reports (Bartgis 1985, Rawinski and Cassin 1986) documented a high degree of threat at most *Arabis serotina* sites and recommended immediate listing by the Service. This listing implements the protection provided by the Endangered Species Act of 1973 (16 U.S.C. *et seq.*) as amended, for *Arabis serotina*.

Summary of Comments and Recommendations

In the November 17, 1988 proposed rule and associated notifications, all interested parties were requested to submit factual reports or information that might contribute to the development of a final rule. Appropriate State agencies, county governments, Federal agencies, scientific organizations, and other interested parties were contacted and requested to comment. Newspaper

notices were published in the Covington Virginian, the Daily News Leader (Staunton), the Pendleton Times, the Inter-Mountain and the Moorefield Examiner from November 22, 1988 through December 4, 1988. Ten comments were received, including letters from one Federal agency, one State agency, three colleges or universities, and five conservation organizations or individuals. Eight commentors supported listing, one acknowledged receipt of the proposal and the final commenter requested additional information. In addition, two of the commentors suggested that critical habitat be listed. The Service's reasons for not determining critical habitat for this species are stated below.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that *Arabis serotina* should be classified as an endangered species. Procedures found at section 4(a)(1) of the Endangered Species Act and regulations (50 CFR part 424) promulgated to implement the listing provisions of the Act were followed. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). These factors and their application to *Arabis serotina* Steele (shale barren rock cress) are as follows:

A. The Present or Threatened Destruction, Modification or Curtailment of Its Habitat or Range

In West Virginia, five of the shale barrens supporting known populations of *Arabis serotina* have been partially destroyed by road construction and a sixth was affected by a small flood-control dam which degraded the habitat available for the species (Bartgis in press). In Virginia, three shale barrens supporting known *Arabis serotina* populations were partially destroyed by road construction, two were damaged by railroad construction, and one is crossed by a hiking trail (T. Wieboldt, Virginia Polytechnic Institute, pers. comm. 1987). The extent of the impacts of all these projects upon the *Arabis serotina* populations is unknown. Two of the West Virginia populations have been grazed by sheep or goats in the past. While no longer grazed by livestock, presently both sites have little vegetation, marked erosional features, and very few *Arabis serotina* individuals (Bartgis in press).

B. Overutilization for Commercial, Recreational, Scientific or Educational Purposes

Arabis serotina is not known to be used for any commercial or recreational purpose. Because of its rarity, it may be subject to collection by botanists and curiosity seekers. Since most populations consist of 20 or fewer individuals, collection or vandalism at those sites could eliminate populations.

C. Disease or Predation

The larvae of the butterfly *Olympia marbled* (*Euchloe olympia*) have been reported to feed on *Arabis serotina* (Clench and Opler 1983), but the report is believed erroneous. Timing of larval emergence suggests that they feed on *A. laevigata* var. *burkii* (Bartgis in press). White-tailed deer (*Odocoileus virginianus*) are known to heavily browse *Arabis serotina* populations.

As in many northeastern states, deer populations are increasing in both Virginia and West Virginia, resulting in greater browsing pressure on many herbaceous plants. In West Virginia, eight of eleven *A. serotina* populations surveyed in 1985 had been browsed by deer resulting in partial or complete loss of 15 percent to 70 percent (average 30 percent) of the inflorescences in those populations. For example, in an unusually large population of 124 plants only 47 plants successfully set seed (Bartgis in press). At three Virginia populations with only one or two reproductive individuals each, all were browsed in 1987 (M. Lipford pers. comm. 1987). Since the plant is a biennial inhabiting a stressful environment, such a significant loss of propagules in any given year could lead to lower reproductive success. As the median reproductive population size observed in West Virginia during 1985 was 17 plants, and in Virginia during 1987 was seven plants, any minor decreases in reproductive potential through grazing or other means could completely eliminate populations.

D. Inadequacy of Existing Regulatory Mechanisms

Arabis serotina is not currently protected by any state or local laws or regulations. Four populations in West Virginia and seven in Virginia occur in established National Forest Special Interest Areas (U.S. Dept. of Agriculture 1986a, 1986b). These areas are managed by the Forest Service to protect the habitat and species present. Some of these populations extend onto adjacent private land. Special Interest Areas (SIA) are not permanent designations and may be revoked by the

administering national forest. Although the SIA designation prevents habitat alteration, it does not provide protection from threats such as deer predation that may adversely affect these populations.

One West Virginia population occurs on a shale barren leased by The Nature Conservancy (TNC), and that organization is also securing voluntary protection of at least two additional populations. These voluntary agreements have no binding legal status. The ten populations on private land are not protected by any laws or regulations.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Shale barren communities are relatively long-term features of the landscape, but may gradually be replaced by woodlands through succession (Keener 1983). However this process is slow and is unlikely to affect more than a very few *Arabis serotina* populations in the near future.

A. serotina is the most sporadic and rarest of the shale barren endemics (Wieboldt in Rawinski and Cassin 1986) and recent surveys show that populations have declined in the past few years. In addition to predation by deer, populations have been adversely affected by severe droughts in 1987 and 1988. One Virginia shale barren supported 100 reproductive individuals in 1985, but in 1987 only nine were found. Another Virginia shale barren showed three individuals in 1984 but none was found in 1987 (M. Lipford, pers. comm. 1987). At one West Virginia barren which had 136 reproductive individuals in 1985, only 12 plants set fruit in 1987 (Bartgis in press).

Many biennial species typically exhibit fluctuations in population numbers from year to year; however, repeated loss of reproductive individuals several seasons in succession poses a serious threat to long-term survival of species. Low population numbers combined with continually decreasing contributions to the seed bank result in the species being particularly vulnerable to any natural or human-caused stresses. No attempt has been made to assess the size of the seed bank at any population. If present trends continue, the future of smaller populations will be highly uncertain.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by the species in determining to make this final rule. Based on this evaluation, the preferred action is to list *Arabis serotina* as endangered. Habitat degradation and loss of reproduction through grazing

pose severe problems to the continued existence of the species. Although 26 populations are known, 15 of these populations number 20 or fewer individuals, making the species particularly vulnerable to any threats. In addition, most of the available shale barren habitat for this species has been inventoried, making it unlikely that many new populations will be found.

Critical Habitat

Section 4(a) 3 of the Act requires, to the maximum extent prudent and determinable, that the Secretary designate critical habitat at the time a species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not presently prudent for *Arabis serotina*. Very small population sizes make this species particularly vulnerable to any vandalism or collecting. Since the plant occurs in unique, easily-identified habitats, publication of critical habitat maps may result in vandalism and collection by curiosity seekers. The Act prohibits taking of plants only in cases of (1) Removal and reduction to possession on lands under Federal jurisdiction, or malicious damage or destruction on such lands; (2) removal, cutting, digging up, or damaging or destroying plants in knowing violation of any State law or regulation, including State criminal trespass law. The Forest Service, The Nature Conservancy and landowners of major populations on private land have been informed of population locations and the importance of protecting the species' habitat. Listing will result in habitat protection through the recovery process and section 7 consultations. Therefore, it would not be prudent to determine critical habitat for *Arabis serotina*.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. The protection required of Federal agencies and the prohibitions against certain activities involving listed plants are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate

their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR Part 402. Section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

The U.S. Department of Agriculture, Forest Service partially or completely owns sixteen of the known *Arabis serotina* populations. Activities in these areas that may affect the species would require section 7 consultation.

The Act and its implementing regulations found at 50 CFR 17.61, 17.62, and 17.63 set forth a series of general trade prohibitions and exceptions that apply to all endangered plants. With respect to *Arabis serotina*, all trade prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.61, apply. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to import or export, transport in interstate or foreign commerce in the course of a commercial activity, sell or offer for sale this species in interstate or foreign commerce, or to remove and reduce to possession the species from areas under Federal jurisdiction. In addition, for listed plants, the 1988 amendments (Pub. L. 100-478) to the Act prohibit the malicious damage or destruction on Federal Lands and the removal, cutting, digging up, or damaging or destroying of listed plants in knowing violation of any State law or regulation, including State criminal trespass law. Certain exceptions can apply to agents of the Service and State conservation agencies. The Act and 50 CFR 17.62 and 17.63 also provide for the issuance of permits to carry out otherwise prohibited activities involving endangered species under certain circumstances. It is anticipated that few trade permits would ever be sought or issued since the species is not common in cultivation or in the wild. Requests for copies of the regulations on plants and inquiries regarding them may be addressed to the Office of Management Authority, U.S. Fish and Wildlife Service, P.O. Box 27329, Washington, DC 20038-7329 (202/343-4955).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the *Federal Register* on October 25, 1983 (48 FR 49244).

References Cited

- Bartgis, R. 1985. Status surveys in West Virginia—Results and analysis of investigations of *Allium oxiphilum*, *Arabis serotina*, *Ptilimnium fluviatile*, and *Trifolium stoloniferum*. Unpublished report. West Virginia Field Office, The Nature Conservancy.
- Bartgis, R. Inpress. Distribution and status of *Arabis serotina* (Brassicaceae) in West Virginia. Proc. W.V. Acad. Sci.
- Clench, H.K., and P. Opler. 1983. Studies on Nearctic *Euchloe*. Part 8. Distribution, ecology, and variation of *Euchloe olympia* (Pieridae) populations. Ann. Carnegie Mus. 52:41-54.
- Hopkins, M. 1937. *Arabis* in eastern and central North America. Rhodora 39:63-98, 106-184, 155-186.
- Keener, C. 1983. Distribution and biohistory of the endemic flora of the mid-

- Appalachian shale barrens. Bot. Rev. 49:65-115.
- Rawinski, T., and J. Cassin. 1986. Final status survey for 32 plants. The Nature Conservancy unpublished report submitted to U.S. Fish and Wildlife Service, Newton Corner, Massachusetts.
- Strausbaugh, P.D., and E.C. Core. 1978. Flora of West Virginia. 2nd edition. Seneca Books, Grantsville.
- Steele, E.S. 1911. New and noteworthy plants from the eastern United States. Contr. U.S. Natl. Herb. 13:359-374.
- U.S. Dept. of Agriculture. 1986a. Land and Resource Management Plan for the George Washington National Forest. U.S. Govt. Printing Office, Washington, D.C.
- U.S. Dept. of Agriculture. 1986b. Land and Resource Management Plan for the Monongahela National Forest. U.S. Govt. Printing Office, Washington, D.C.
- Wieboldt, T. 1987a. The shale barren endemic, *Arabis serotina* (Brassicaceae). (Abstract). Va. Acad. Sci. 37(2):86.
- Wieboldt, T. 1987b. The shale barren endemic, *Arabis serotina* (Brassicaceae). Sida 12(2):381-389.

Author

The primary author of this rule is Sharon W. Morgan (see ADDRESSES section) using substantial information provided by Rodney L. Bartgis, West Virginia Department of Natural Resources.

List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

Regulation Promulgation

PART 17—[AMENDED]

Accordingly, Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, is amended as set forth below:

1. The authority citation of Part 17 continues to read as follows:

Authority: Pub. L. 93-205, 87 Stat. 884; Pub. L. 94-359, 90 Stat. 911; Pub. L. 95-632, 92 Stat. 3751; Pub. L. 96-159, 93 Stat. 1225; Pub. L. 97-304, 96 Stat. 1411; Pub. L. 100-478, 102 Stat. 2306; Pub. L. 100-653, 102 Stat. 3825 (16 U.S.C. 1531 et seq.); Pub. L. 99-625, 100 Stat. 3500 (1986), unless otherwise noted.

2. Amend § 17.12(h) for plants by adding the following, in alphabetical order under the Family Brassicaceae, to the List of Endangered and Threatened Plants:

§ 17.12 Endangered and threatened plants.

* * * * *

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Species	Historic Range	Status	When listed	Critical habitat	Special rules
Scientific name	Common name				
Brassicaceae—Mustard Family					
<i>Arabis serotina</i>	Shale barren rock cress.....	U.S.A. (VA, WV).....	E	352 NA	NA

Dated: June 12, 1989

Susan Recce Lamson,

Acting Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 89-16345 Filed 7-12-89; 8:45 am]

BILLING CODE 4310-55-M

50 CFR Part 17

RIN 1018-AB18

Endangered and Threatened Wildlife and Plants; Final Rule to Determine *Astragalus osterhoutii* and *Penstemon penlandii* to be Endangered Species

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The U.S. Fish and Wildlife Service (Service) has determined two plants, *Astragalus osterhoutii* (Osterhout milk-vetch) and *Penstemon penlandii* (Penland beardtongue), to be

endangered species under the Endangered Species Act of 1973, as amended. Both species are endemic to Middle Park in Grand County, Colorado, where they grow on shale badlands. Penland beardtongue is only known within 2 miles of the type locality. The Osterhout milk-vetch occurs in scattered populations over a 15-mile range. Both species occur largely on Federal land administered by the Bureau of Land Management, with smaller occurrences on State and private land. The Osterhout milk-vetch would be impacted directly by dam construction and inundation, and secondarily by recreational uses and development around the proposed Muddy Creek Reservoir. The single Penland beardtongue area is a fragile habitat vulnerable to off-road vehicle damage. The determination that *Astragalus osterhoutii* and *Penstemon penlandii* are endangered species will provide them protection under the authority of the

Endangered Species Act of 1973, as amended.

EFFECTIVE DATE: August 14, 1989.

ADDRESSES: The complete file for this rule is available for public inspection, by appointment, during normal business hours at the State Supervisor's Office, Fish and Wildlife Enhancement, 730 Simms Street, Room 290, Golden, Colorado 80401 and at the Western Colorado Fish and Wildlife Enhancement Office, 529 25½ Road, Suite B-113, Grand Junction, Colorado 81505.

FOR FURTHER INFORMATION CONTACT: John Anderson at the Grand Junction address above (303/243-2778 or FTS 322-0351).

SUPPLEMENTARY INFORMATION:

Background

Astragalus osterhoutii and *Penstemon penlandii* are herbaceous perennial wildflowers endemic to Middle Park, a

sagebrush basin in north-central Colorado. They are restricted to badlands of Upper Cretaceous Niobrara and Pierre Shale and of Tertiary (Miocene Troublesome Formation) siltstone sediments at 2,250-2,350 meters (7,450-7,700 feet) elevation within 6 miles to the north and east of the town of Kremmling. *Astragalus osterhoutii* Jones was described in 1923 by Marcus Jones (1923) from material collected by George Osterhout, an early Colorado botanist. Osterhout first collected it in fruit July 17, 1905 (specimen 3038), and in flower June 9, 1906 (specimen 3235) at "Sulphur Springs" (holotype) and "about 4 miles below Sulphur Springs, Grand County" (cotype). The holotype (at the Pomona College Herbarium, Rancho Santa Ana Botanic Garden, California) is a combination of material from these two specimens. The type locality had been interpreted to be near the town of Hot Sulphur Springs, which is 17 miles east of Kremmling (Barneby 1964, Peterson et al. 1981); but, despite several searches, the Osterhout milk-vetch has never been found in this area. However, the population recently located along Troublesome Creek is adjacent to Sulphur Gulch, which contains a Sulphur Spring (about 6 miles northeast of Kremmling), and this is likely the type locality (Rupert Barneby, New York Botanical Garden, *in litt.*, 1987).

Until the 1980's, *A. osterhoutii* was collected only five times and from two additional localities: a small population 1 mile northeast of Kremmling and the largest population along Muddy Creek 6 miles north of Kremmling. These populations were discovered by Beath in 1939 and 1940 respectively (Peterson et al. 1981). The population along Muddy Creek was further delineated during the preparation of the status report (Peterson et al. 1981) and the Rock Creek/Muddy Creek Reservoir Draft Environmental Impact Statement (Grah and Neese 1987). Occurrences along Pass Creek and Red Dirt Creek near Hinman Reservoir, a few miles west of Muddy Creek, were also discovered during inventories for the Draft Environmental Impact Statement (Grah and Neese 1987). During graduate studies at the University of Colorado, Jeff Karron located two sites, 1 mile and 5 miles northeast of Kremmling, the latter along Troublesome Creek. These sites probably represent Beath's 1939 locality and Osterhout's original "Sulphur Springs" locality in the Sulphur Gulch/Troublesome Creek vicinity, respectively. In the summer of 1988, the author found a small colony of about 500 plants of *A. osterhoutii* on a shale hill along the north side of the Colorado

River 3 miles east of Troublesome Creek.

There are an estimated 25,000 to 50,000 Osterhout milk-vetch plants, approximately 90 percent of the total for the species, in the vicinity of Muddy Creek. The remaining 10 percent of the species occurs on the eastern and western extremities of the range at Troublesome and Red Dirt Creek (a tributary of Muddy Creek), respectively.

Penstemon penlandii Weber was independently discovered in the summer of 1986 by David Johnson of Western Resource Development Company (Weber 1986) and the author while on visits to the Osterhout milk-vetch Troublesome Creek site located by Karron. While the Osterhout milk-vetch is found only along one gulch here, the Penland beardtongue population of approximately 5,000 plants extends over the whole series of badlands between Troublesome Creek and Sulphur Gulch, which are approximately 1½ miles long and ½ mile wide. In the summer of 1988, the author located a small colony of 500 plants along Troublesome Creek 2 miles north of the type locality. This is the only known area for the Penland beardtongue.

A. osterhoutii and *P. penlandii* are both disjunct from their nearest relatives, which occur approximately 150 miles away in southwestern Wyoming and northwestern Colorado: *A. grayi* and *A. nelsonianus* (Barneby 1964), and *P. paysoniorum* (Weber 1986) and *P. gibbensii* (personal observation), respectively. These species may be remnants of a previous extension of northern species southward during glacial or pluvial periods. As such, they can provide clues to past floristic migrations and are scientifically valuable in the study of biogeography. *A. osterhoutii* has also been the subject of evolutionary studies comparing rare and common species of *Astragalus* (Karron 1987a). Their adaptation to specific geologic habitats makes them good scientific subjects for such studies.

A. osterhoutii is a tall rush-like plant with linear leaflets and several bright green stems up to 100 centimeters (40 inches) tall. There are 12-25 large white flowers, 2.4 centimeters (1.0 inch) long, per inflorescence (flowering stalk), and stipitate pendulous pods, 4.5 centimeters (1.8 inches) long. *P. penlandii* is a short plant with linear leaves and several clumped, pubescent stems up to 25 centimeters (10.0 inches) tall. There are 5-15 bright bicolored flowers with blue lobes and a violet throat, 1.2-1.5 centimeters (0.5-0.6 inch) long, per inflorescence; the fruits are small brown capsules. Both species are characterized

by clusters of showy flowers relative to the size of the plant.

The largest population of the Osterhout milk-vetch occurs on shale benches along Muddy Creek, the site of the proposed Muddy Creek Reservoir. While the lower edges of this population would be inundated by the proposed reservoir, there would be additional impacts to the remainder of the population from associated development and recreational use of the reservoir and the surrounding benches (U.S. Forest Service and U.S. Bureau of Land Management 1988). Changes in vegetative composition, particularly an increase in big sagebrush density due to past grazing history, may have resulted in a decrease in the size and/or density of Osterhout milk-vetch populations. The Troublesome Creek/Sulphur Gulch badlands, the habitat of both the Osterhout milk-vetch and Penland beardtongue, are a fragile habitat susceptible to damage from off-road vehicle use. Approximately two-thirds of the large Osterhout milk-vetch population along Muddy Creek is on Federal land administered by the Bureau of Land Management (Bureau); the remaining one-third is mostly on private land, with two colonies on State land (although the edges of other Osterhout milk-vetch colonies may be within State highway rights-of-way). The small occurrences up Pass Creek and Red Dirt Creek near Hinman Reservoir are on private land. The small site 1 mile northeast of Kremmling is on Bureau land, and the Troublesome Creek/Sulphur Gulch populations of Osterhout milk-vetch and Penland beardtongue are on Bureau land and private land.

Federal action involving *A. osterhoutii* began with section 12 of the Endangered Species Act (Act) of 1973 (16 U.S.C. 1531 et seq.), which directed the Secretary of the Smithsonian Institution to prepare a report on those plants considered to be endangered, threatened, or extinct. This report, designated as House Document No. 94-51, was presented to Congress on January 9, 1975. On July 1, 1975, the Service published a notice of its acceptance of this report as a petition within the context of section 4(c)(2), now section 4(b)(3)(A), of the Act and of its intention thereby to review the status of those plants. *A. osterhoutii* was included as "endangered" in the July 1, 1975, petition. On December 15, 1980 (45 FR 82485), and September 27, 1985 (50 FR 39526), the Service published updated notices reviewing the native plants being considered for classification as threatened or endangered. *A. osterhoutii* was included in these notices as a category 2 species.

Category 2 comprises taxa for which the Service possesses information indicating that proposing to list them as endangered or threatened species is possibly appropriate, but for which conclusive data on biological vulnerability and threat(s) are not currently available to support listing. The present proposal is based on biological data from Peterson et al. (1981), Karron (1987a), and Grah and Neese (1987).

Section 4(b)(3)(B) of the Endangered Species Act, as amended in 1982, requires the Secretary of the Interior to make findings on certain petitions within 1 year of their receipt. Section 2(b)(1) of the Act's amendments of 1982 further requires that all petitions pending on October 13, 1982, be treated as having been newly submitted on that date. Because the 1975 Smithsonian report was accepted as a petition, all the taxa contained in the notice, including *A. osterhoutii*, were treated as being newly petitioned on October 13, 1982. On October 13, 1983, October 12, 1984, October 11, 1985, October 10, 1986, and October 9, 1987, the Service made successive 1-year findings that the petition to list *A. osterhoutii* was warranted, but precluded by other listing actions of higher priority. The Service published a proposed rule to list *A. osterhoutii* and *P. penlandii* as endangered species on July 5, 1988 (53 FR 25181), constituting the next 1-year finding that would have been required on or before October 9, 1988.

Because it was discovered in 1986, after the last notice of review for plants was published in the *Federal Register* in 1985, there has been no previous Federal action involving *P. penlandii*.

Summary of Comments and Recommendations

In the July 5, 1988, proposed rule (53 FR 25181) and associated notifications, all interested parties were requested to submit factual reports or information that might contribute to the development of a final rule. Appropriate State and Federal agencies, county governments, scientific organizations, and other interested parties were contacted and requested to comment. Newspaper notices that invited public comments were published in the *Middle Park Times* on August 4, 11, 18, and 25, 1988, and in the *Rocky Mountain News* on September 1 and 2, 1988. A public hearing was requested by the Grand County Board of Commissioners (County) on August 5, 1988, and by the Colorado River Water Conservation District (Water District) on August 12, 1988. The Service extended the initial comment period to October 24, 1988 (53

FR 37009), to accommodate the requested public hearing which was held on October 13, 1988, in Kremmling, Colorado. Newspaper notices announcing the public hearing and the extension of the comment period were published in the *Middle Park Times* on October 6, 1988, and in the *Rocky Mountain News* on October 6 and 7, 1988. At the hearing a Service botanist read a prepared statement and showed slides of the plants and their habitat. Individuals in the audience were then given the opportunity to present their oral comments. Following the comments there was a question and answer period. Six people attended the public hearing and three presented oral comments. Eleven written comments also were received in response to the proposed rule. The three oral comments were from parties who also submitted written comments and raised similar issues.

Seven written comments in support were received, including the State, conservation groups, and professional botanists; three written comments in opposition were received from a local (county) government and a local water district; and one written comment was neutral. Two oral comments in opposition to the listing were received from a local water district and a local (county) government, and one supporting comment was received from a professional botanist. Written and oral comments of similar content are grouped into a number of general issues. These issues and the Service's response to each are discussed below.

Issue 1: The Water District and the County stated that the estimated population size of Osterhout milk-vetch along Muddy Creek was 100,000 plants and that the plant covered 50 percent more acres in 1987 than in 1985. Therefore, the impacts of the Muddy Creek Reservoir were less than indicated in the Service's proposed rule which states 25,000 plants and uses the 1985 acreage figure.

Response: The 100,000 figure was used in a preliminary Biological Assessment (U.S. Forest Service 1987), but the final Biological Assessment (U.S. Bureau of Land Management 1989) and the Supplemental Draft Environmental Impact Statement (U.S. Forest Service and Bureau of Land Management 1988) use a figure of 50,000 plants. The estimate of 25,000 plants is the result of personal observations by a Service botanist in July 1986, August 1987, and July 1988. All of these figures are based on ocular estimates of the same plant populations, but by different observers. The higher figures are based on extrapolations of an estimated average

density over the total acreage, rather than an actual census. Extrapolations are usually high estimates because plants are not evenly distributed in nature, due to such things as micro-habitat differences or limited seed dispersal. The Service believes that the degree or level of impact should be determined based on the low end of population fluctuations, which represents its base population number.

The range of *A. osterhoutii* does not appear to be expanding and is still confined to a small part of Middle Park. It should also be understood that during flood stages an additional, undetermined number of plants would be inundated. Moreover, besides the direct impacts, another 80 acres of habitat could be impacted by recreational activities and development.

Issue 2: The Water District and the County stated that existing Bureau of Land Management regulations and the Conservation Plan proposed in the (now) Final Biological Assessment (U.S. Bureau of Land Management 1989) are sufficient to minimize impacts to *A. osterhoutii*.

Response: Unless *A. osterhoutii* is listed there would be no legal requirement for the Bureau to make the Conservation Plan or any other measures permit conditions of the project. The Final Biological Assessment (U.S. Bureau of Land Management 1989) specifically states that protection would only be required by the Bureau if Osterhout milk-vetch is listed, which supports the need for listing. The Service believes that the Conservation Plan by itself may be insufficient to protect the species, and that protection of additional plant sites is necessary. Moreover, the habitat manipulation techniques in the Conservation Plan are experimental and their success uncertain. And finally, if the species is not listed there is no law requiring the Bureau to protect the species and administer its recovery if the Conservation Plan falls short of its goal or if future activities are planned that could affect the species.

Issue 3: The Water District stated that " * * * the best scientific and commercial data currently available does not justify * * * endangered status [for *Astragalus osterhoutii*]."

Response: Professional botanists who have worked on the species, including a Service botanist, a graduate student whose dissertation included the species, professional botanists with the State and conservation groups, and consultants on the Muddy Creek Reservoir, think that existing biological data support endangered status. Their

data and conclusions are included in this rulemaking. A pre-proposal letter from a consultant stated: "Both species are highly vulnerable to extinction by virtue of extremely limited distribution habitat, and population numbers * * *" (Elizabeth Neese, independent consultant, *in litt.*, 1988). Also, their fragile habitat is highly susceptible to surface disturbance. The Osterhout milk-vetch was a candidate for listing as threatened or endangered (1980) before the Muddy Creek Dam was proposed (1985).

Issue 4: The Water District stated that listing would not further elevate awareness of the plant's status and promote conservation efforts.

Response: The fact that the plants and their habitats have already received consideration in the environmental impact statement and biological assessment has already contributed to an awareness of them among parties involved in that project. However, other interested parties such as the World Conservation Centre are notified once a species is listed. Increasing awareness is only one reason for listing.

Issue 5: The Water District stated that there is not a serious present threat to the Penland beardtongue.

Response: Off-road vehicle use and mineral exploration are definite threats to the species. Off-road vehicle damage and mineral exploration have occurred in the area, and both are a threat to the species' fragile habitat.

Issue 6: The County stated that private lands around the reservoir are zoned at the least intensive county zoning designation, Forestry and Open.

Response: The Forest and Open zoning does require 20-60 percent open space in developments, but still allows lodges and cabins to be built. Therefore, surface disturbance of the habitat would still be possible.

Issue 7: The County stated that both species occur in the Pass Creek, Red Dirt Creek, and Troublesome Creek areas.

Response: All inventories by consultants and the Service through the 1988 field season have shown Penland beardtongue to be limited to just the Troublesome Creek area. The Service has not received any data documenting occurrences of Penland beardtongue at these other sites.

Issue 8: The County stated that only marginal habitat at the lower edges of the population would be damaged by inundation and bench sloughing.

Response: The plant density is naturally lower at the edge of an occurrence on the sideslopes of draws than at its center on the top of a bench. However, because of the plant's rarity

and limited range, the edges of the occurrences are still important to its survival. They represent the potential expansion and enlargement of an occurrence. Also, bench sloughing around the reservoir would "eat" into the benches and hence the center of the occurrences where the highest densities of plants exist.

Issue 9: The County stated that past and present grazing impacts on the species may have been greater than the effect of a reservoir on a fringe of the population.

Response: Past grazing, particularly historically high numbers around the turn of the century, have significantly altered the pristine ecological condition of Middle Park. Because the plants grow best in open ecological settings with little vegetative competition, and past overgrazing has caused an increase in big sagebrush density, it is possible that the two plants were more common in the pristine habitat. Studies with habitat manipulation of sagebrush stands have been proposed in the Conservation Plan to test this hypothesis. If it is correct, then this is another factor endangering the plants above and beyond the reservoir and its secondary impacts. Current levels of grazing, which are much lower than historic levels, are probably not further endangering the plants.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that *Astragalus osterhoutii* and *Penstemon penlandii* should be classified as endangered species. Procedures found at section 4(a)(1) of the Endangered Species Act and regulations (50 CFR Part 424) promulgated to implement the listing provisions of the Act were followed. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). These factors and their application to *Astragalus osterhoutii* Jones (Osterhout milk-vetch) and *Penstemon penlandii* Weber (Penland beardtongue) are as follows:

A. The Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range

A. osterhoutii and *P. penlandii* are both naturally rare species. *A. osterhoutii* has only one major population along Muddy Creek, with small scattered outlying colonies up to a distance of 6 miles away. *P. penlandii* is known only from one area, with two occurrences 2 miles apart along

Troublesome Creek/Sulphur Gulch (which is also the eastern most area for *A. osterhoutii*). The badlands on which an estimated 5,000 individuals of *P. penlandii* occur are currently vulnerable to modification from off-road vehicle use because of their fragile soils, steep topography, and arid environment. There are dirt roads running through the badlands which provide easy access for off-road vehicle use. Off-road vehicle damage and mineral exploration have occurred on the area. The resulting modification of the habitat could result in a curtailment of the range for Penland beardtongue.

The major population of *A. osterhoutii* along Muddy Creek has an estimated 25,000 to 50,000 plants (personal observation; represents about 90 percent of the total for the species) on 132 acres and is threatened by the proposed Muddy Creek Reservoir. With construction of the high dam proposal at 7,485 feet elevation, 18 acres or 14 percent of the Muddy Creek population would be inundated. An alternative lower dam proposal at 7,475 feet would inundate 10 acres or 8 percent of the population (Bio/West 1988). Also, during flood stages there would be a short term rise of 8 to 10 feet in the reservoir level which would inundate an undetermined number of additional plants. Additional direct losses from reservoir construction could result from the raised water table through perennial soil saturation, and from surface disturbance due to construction activities such as road building, creation of borrow pits, and heavy equipment movement (Grah and Neese 1987). While direct inundation and bench sloughing would destroy habitat at the lower edges of the population, significant secondary impacts to the benches around the reservoir and along Alkali Slough and Pass Creek could occur with the building of recreation facilities and increased use of the area by people and off-road vehicles. The presence of the reservoir would likely stimulate private development within the plant's range near the reservoir. These potential secondary impacts would be the same for either dam height and could cause destruction, modification, or curtailment of Osterhout milk-vetch habitat or range.

Depending upon the degree of future recreational usage, secondary impacts from the Muddy Creek Reservoir may be even greater to the Osterhout milk-vetch than direct impacts from reservoir construction (Grah and Neese 1987). In addition to the direct impacts mentioned above, 80 acres, or 60 percent of the habitat of *A. osterhoutii*, could be threatened by secondary impacts from

recreational activities associated with the Muddy Creek Reservoir proposal (Bio/West 1988). Proposed mitigation plans to offset direct and secondary impacts of the reservoir construction and recreation include management of the habitat remaining around the reservoir to minimize effects to the milk-vetch; fencing the habitat and designing public recreational facilities to minimize the impact on the species; protection of off-site populations; land exchanges; a monitoring program with possible habitat manipulation; and plant surveys for avoidance of the milk-vetch during construction.

Mining claims exist along Muddy Creek where the Osterhout milk-vetch occurs. Also, the density of *A. osterhoutii* has been observed to be lower in big sagebrush stands than in the adjacent open benchlands where it normally grows. It may be that the past grazing history has caused an increase in big sagebrush cover with a resultant canopy closure and modification of Osterhout milk-vetch habitat with loss of individuals through lowered densities of populations.

B. Overutilization for Commercial, Recreational, Scientific, or Education Purposes.

Taking for these purposes has not been documented. However, both plants have showy flowers and grow in accessible areas, thus both are vulnerable to collecting and vandalism.

C. Disease or Predation

No threats are known.

D. The Inadequacy of Existing Regulatory Mechanisms

There are no existing Federal or State laws which protect *A. osterhoutii* and *P. penlandii*. The Act would provide protection and encourage active management through the "Available Conservation Measures" discussed below.

E. Other Natural or Manmade Factors Affecting its Continued Existence

A. osterhoutii is an obligate outcrossing species (Karron 1989) that requires primarily ground-nesting bumble bees for pollination (Karron 1987b). Thus, its pollinators, as well as the plants themselves, could be impacted by surface disturbance. Also, a sufficiently large population size must be maintained to support pollination by outcrossing. Genetic studies by Karron *et al* (1988) using starch gel electrophoresis show that *A. osterhoutii* is already genetically depauperate, probably due to small population size. The studies also show that genetic

differences exist between the Muddy Creek population and those east of Kremmling, emphasizing the need for protection of both sites.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by these species in determining to make this rule final. Based on this evaluation, the preferred action is to list *Astragalus osterhoutii* and *Penstemon penlandii* as endangered. Both are restricted endemics occurring on a limited habitat, and with only one major population each. *A. osterhoutii* would be impacted directly by construction of the proposed Muddy Creek Reservoir, and secondarily by recreational uses and development around the reservoir. *P. penlandii* is vulnerable to off-road vehicle damage to its fragile habitat. There presently exists no opportunity for protection under existing legislation (State and Federal). For reasons given below, it is not considered prudent to propose designation of critical habitat.

Critical Habitat

Section 4(a)(3) of the Act requires, to the maximum extent prudent and determinable, that the Secretary designate critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not presently prudent for these species at this time because no benefit to the species can be identified that would outweigh the potential threat of vandalism or collection, which might increase if detailed critical habitat maps are published. Such maps would identify areas on public and private land, thereby making it more difficult for Federal enforcement agencies to protect the species. As discussed under Factor B in the "Summary of Factors Affecting the Species," both plants have showy flowers and grow in accessible areas, thus both are vulnerable to collecting and vandalism. Federal involvement in the areas where the plants occur can be identified without the designation of critical habitat. All involved parties and landowners will be notified of the location and importance of protecting these species' habitat, and such protection will be addressed through the recovery process and through section 7 procedures. Therefore, it would not be prudent to determine critical habitat for *A. osterhoutii* and *P. penlandii* at this time.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered

Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. The protection required of Federal agencies and the prohibitions against certain activities involving listed plants are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR Part 402. Section 7(a)(2) requires Federal agencies to insure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species or to destroy or adversely modify its critical habitat. If a Federal action may adversely affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

A. osterhoutii and *P. penlandii* occur primarily on Federal land administered by the Bureau. The Bureau's involvement could include section 7 consultation on the proposed Muddy Creek Reservoir, monitoring the impacts of off-road vehicle use, and studying the effects of grazing systems on vegetative composition. The Army Corps of Engineers would also be involved in any section 7 consultation for the reservoir because of the need for a 404 permit. On both Federal and private land, the Service expects that listing would elevate the awareness of these plants' status and foster efforts aimed toward their conservation.

The Act and its implementing regulations found at 50 CFR 17.61, 17.62, and 17.63 for endangered species set forth a series of general trade prohibitions and exceptions that apply to all endangered plants. All trade prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.61, apply. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to import or export, transport in interstate or foreign commerce in the course of a commercial activity, sell or offer for sale these species in interstate or foreign

commerce, or to remove and reduce to possession these species from areas under Federal jurisdiction. In addition, for listed plants, the 1988 amendments (Pub. L. 100-478) to the Act prohibit the malicious damage or destruction on Federal lands and the removal, cutting, digging up, or damaging or destroying of listed plants in knowing violation of any State law or regulation, including State criminal trespass law. Certain exceptions apply to agents of the Service and State conservation agencies. The Act and 50 CFR 17.62 and 17.63 also provide for the issuance of permits to carry out otherwise prohibited activities involving endangered species under certain circumstances. With regard to *A. osterhoutii* and *P. penlandii*, it is anticipated that few, if any, trade permits would ever be sought or issued because these species are not common in cultivation or in the wild. Requests for copies of the regulations on plants and inquiries regarding them may be addressed to the Office of Management Authority, U.S. Fish and Wildlife Service, P.O. Box 27329, Washington, DC 20038-7329 (703/358-2093).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the *Federal Register* on October 25, 1983 (48 FR 49244).

References Cited

A complete list of all references cited here is available upon request from Fish and Wildlife Enhancement Offices in Golden, Colorado (303/236-2675 or FTS 776-2675) or Grand Junction, Colorado (303/243-2778 or FTS 322-0351, see **ADDRESSES** above).

Author

The primary author of this final rule is John L. Anderson, botanist, U.S. Fish and Wildlife Service, Grand Junction, Colorado (303/243-2778; FTS 322-0351, see **ADDRESSES** above).

List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

Regulation Promulgation

Accordingly, Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, is amended as set forth below:

PART 17—[AMENDED]

1. The authority citation for Part 17 continues to read as follows:

Authority: Pub. L. 93-205, 87 Stat. 884; Pub. L. 94-359, 90 Stat. 911; Pub. L. 95-632, 92 Stat. 3751; Pub. L. 96-159, 93 Stat. 1225; Pub. L. 97-304, 96 Stat. 1411; Pub. L. 100-478, 102 Stat. 2306; Pub. L. 100-653, 102 Stat. 3825 (16 U.S.C. 1531 *et seq.*); Pub. L. 99-625, 100 Stat. 3500, unless otherwise noted.

2. Amend § 17.12(h) by adding the following, in alphabetical order under the families Fabaceae and Scrophulariaceae, to the List of Endangered and Threatened Plants:

§ 17.12 Endangered and threatened plants.

* * * * *
(h) * * *

Species		Historic range	Status	When listed	Critical habitat	Special rules
Scientific name	Common name					
Fabaceae—Pea family						
<i>Astragalus osterhoutii</i>	Osterhout milk-vetch.....	U.S.A. (CO).....	E	353	NA	NA
Scrophulariaceae—Snapdragon family						
<i>Penstemon penlandii</i>	Penland beardtongue.....	U.S.A. (CO).....	E	353	NA	NA

Dated: June 12, 1989.
 Susan Recce Lamson,
 Acting Assistant Secretary for Fish and
 Wildlife and Parks.
 [FR Doc. 89-16346 Filed 7-12-89; 8:45 am]
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